Qiuyi Wu

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Research Interests   Functional Data Analysis, Kernel Smoothing, Image Processing, High Dimensional Regression, Text Mining, Recommender System, Spatial Statistics, AI Fairness

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Employment

Sep.2024 - Present   **Duke University**, Department of Biostatistics and Bioinformatics, US
Postdoc Research Fellow
Mentor: Dr. Anru Zhang

Education

2019-2024   Ph.D., Statistics, United States
University of Rochester, Department of Biostatistics and Computational Biology
Advisor: Dr. Xing Qiu

2016-2018   M.S., Applied Statistics, United States
Rochester Institute of Technology, School of Mathematical Sciences
Advisor: Dr. Ernest Fokoue

2012-2016   B.Econ., Finance, China
Donghua University, Glorious Sun School of Business and Management

Honors and Awards

Scholarship

- **William Jackson Hall Graduate Student Fellowship** for academic excellence, 2023-2024
  awarded annually to one PhD student in UR Biostat Dept through the combination of outstanding performance in coursework and qualifying exams; excellence in their service as a graduate student teaching assistant; and timely completion of a dissertation containing work judged to be of particular significance in both its methodological contribution and potential impact in applications.
- **Dean's Ph.D. Fellowship** for PhD study in University of Rochester, 2019-2021
- **RIT Merit Scholarship** for Master Study in RIT, 2016-2018

Conference Award

- **Clinton Miller Award** for Best Student Poster in SRCOS Summer Research Conference, *Clemson*, 2024
- **Gold Medal for Best Methodology and Theory Award** in UPSTAT Conference, 2024
- **Gold Medal for Data Analytics Competition** in UPSTAT Conference, 2021
- **ASA Section on Text Analysis Best Student Presentation Award** in JSM Conference, 2020
- **Gold Medal for Best Student Research Award** in UPSTAT Conference, 2019

- **NC ASA Young Researcher Award** in AISC Conference, 2018
- **Gold Medal for Best Computation and Application Award** in UPSTAT Conference, 2018
- **Promising Academic Leader Award** in UPSTAT Conference, 2018
- **Young Scientific Leader Award** in UPSTAT Conference, 2017
- **Student Scholarship Winners** for SAS Global Forum, 2017

Travel Award

- **CWS Do-Bui Travel Award** for JSM conference, *Nashville*, 2025
- **ASA Early-Career Travel Award** for JSM conference, *Nashville*, 2025
- **ASA SSPA Conference Grant** for JSM conference, *Nashville*, 2025
- **IMSI NSF Travel Fund** for "Statistics Meets Tensors Methodology, Theory, and Applications" Workshop, *Chicago*, 2025
- **ASA Travel Award** for Preparing to Teach Statistics and Data Science Workshop, *Oregon*, 2024
- **Travel Award** for FutureBAProf Workshop, *Iowa*, 2024
- **NSF/Boyd Harshbarger Travel Award** for SRCOS Summer Research Conference, *Clemson*, 2024
- **SIAM Travel Award** for SIAM SEAS Conference, *VT*, 2023
- **ASA BIPOC DWMP Travel Award** for JSM Conference, *Washington DC*, 2022
- **SAMSI Travel Award** for Closing Ceremony, *Duke*, 2021
- **ACNN Travel Award** for Big Data Neuroscience Workshop, *UMich*, 2019
- **SAMSI Travel Award** for Deep Learning Opening Workshop, *Duke*, 2019
- **ASA Travel Award** for IMS/ASA Spring Research Conference, *VT*, 2019
- **RIT Research & Creativity Travel Award** for JSM Conference, *Vancouver*, 2018

Publications

Published or Accepted:

2024   LeBlanc, P., Banks, D., Fu, L., Li, M., Tang, Z., **Wu, Q.** (2024). "Recommender Systems: A Review"
Journal of the American Statistical Association (2024): 1-21. doi: 10.1080/01621459.2023.2279695

2023   Panisch, L., Murphy, H., **Wu, Q.** et al (2023). "Adverse childhood experiences predict diurnal cortisol
throughout gestation." *Psychosomatic Medicine.* 85(6), 507-516.

2022   **Wu, Q.** et al (2022). "A conditional approach for joint estimation of wind speed and direction under
future climates." *Advances in Statistical Climatology, Meteorology and Oceanography* 8.2: 205-224.

2022   Murphy, H., Gu, Y., **Wu, Q.**, et al (2022). "Prenatal Diurnal Cortisol: Normative Patterns and Associations
with Affective Symptoms and Stress." *Psychoneuroendocrinology (2022):* 105856.

2021   Frigau, L., **Wu, Q.**, Banks, D. (2021). "Optimizing the JSM Program."
Journal of the American Statistical Association (2021): 1-21. doi: 10.1080/01621459.2021.1978466

2018   **Wu, Q.**, Fokoue, E., & Kudithipudi, D. (2018). "An Ensemble Learning Approach to the Predictive
Stability of Echo State Networks. *Journal Of Informatics And Mathematical Sciences"*, 10(1 & 2),
181 - 199. doi: 10.26713/jims.v10i1-2.827

2018   **Wu, Q.** (2018). "Statistical Aspects of Music Mining: Naive Dictionary Representation." *Thesis.*
RIT Scholar Works. *Accessed from https://scholarworks.rit.edu/theses/9932*

In Preparation:

2026   **Wu, Q.** et al. (2026). Two book chapters in *AI for Purpose: Revolutionizing Healthcare Through Data Science.*

(Eds. [K. Zou, L. DeTora, & D. Patel,]) Taylor & Francis, CRC Press. (Forthcoming):
• Chapter 12: *AI and Machine Learning in Sepsis*
• Chapter 14: *Harmonizing Data and Creativity: Text Mining Techniques for Music Discovery in the Age of Generative AI*

2025   **Wu, Q.**, Zhu, Z., Zhang, A. (2025). Soft Post-Clustering Inference with EHR Applications

2025   **Wu, Q.**, Shi, P. et al. (2025). Spatially Weighted Canonical Correlation Analysis of Cortical Metabolome and Proteome in the Aging Macaque Brain

2025   **Wu, Q.**, Qiu, X. (2025). Image Processing with Optimally Designed Parabolic Partial Differential Equations

2025   **Wu, Q.**, Qiu, X. (2025). Optimal Gaussian Kernel Smoothing Strategy

2025   Sadia, C., Nashae, P., Nafisa, I., Ying, M., **Wu, Q.** et al (2025). Prenatal Perfluoroalkyl Substances (PFAS) Alter Infant Cortisol Reactivity (submitted to Developmental Psychobiology)

2025   Nafisa, I., Sally, T., Donald, H., Yihui, G., Xing, Q., **Wu, Q.** et al (2025). Prenatal exposure to PM2.5 and NO2 and its association with child cortisol measures during the first year of life (submitted to ISEE 2025)

2025   Zoe, D., Hannah, M., **Wu, Q.** et al (2025). Do measures of general versus pregnancy-related anxiety have distinct maternal-fetal-placental biology? (submitted to Journal of Affective Disorders)

Ad-hoc

2025   40-minute Interview featured in THE NEXT STEP: Career and Grad School Advice from SMD Alumni
"Finding a Path in Data and Discovery with Qiuyi Wu" [Podcast] [Youtube] [Spotify]

2021   Short Interview Piece appears in July 2021 issue of Amstat News magazine
"TAIG Contest Winners Tell of Experience"

Research Experience

Sep.2024 - Present   **Duke University**, Department of Biostatistics and Bioinformatics, US
Postdoc

Mentor: Dr. Anru Zhang
Research Fields: Post-clustering Inference; EHR; Translational Science

Sep.2024 - Present   **Duke University**, Department of Biostatistics and Bioinformatics, US
Postdoc

Mentor: Dr. Pixu Shi
Research Fields: Spatial Multi-Omics Analysis

Jun.2020 - Aug.2024   **University of Rochester**, Biostatistics and Computational Biology, US
PhD student

Mentor: Dr. Xing Qiu
Research Fields: Kernel Smoothing; Functional Data Analysis; Image Processing

Jun.2022 - Aug.2022   **Liberty Mutual Insurance Company**, GRS Advanced Analytics team, US
Data Scientist Intern

Mentor: Dr. Robert Yuen
Project Topic: Predicting the profitability of construction projects via structured data and NLP

Jun.2020 -   **Argonne National Laboratory (ANL)**, CELS/EVS Division, US
Aug.2020   *Research Aide Intern*

         Mentor: Dr. Jiali Wang & Dr. Whitney Huang & Dr. Julie Bessac
         Research Fields: Uncertainty Quantification; Wind Modeling

Jun.2019 -   **Argonne National Laboratory (ANL)**, CELS/MCS Division, US
Aug.2019   *Research Associate*

         Mentor: Dr. Julie Bessac & Dr. Whitney Huang & Dr. Jiali Wang
         Research Fields: Spatial Statistics; Extreme Value Analysis

May.2018 -   **Statistical and Applied Mathematical Sciences Institute (SAMSI)**, US
May.2019   *Graduate Research Fellow*

         Mentor: Dr. David Banks
         Research Fields: Text Mining; Spatial Statistics

Dec.2016 -   **Rochester Institute of Technology**, Department of Computer Engineering, US
Nov.2017   *Research Assistant*

         Mentor: Dr. Dhireesha Kudithipudi & Dr. Ernest Fokoué
         Research Fields: Neural Networks; Ensemble Learning; Topic Modeling

Teaching Experience

2025   **Charles D. Owen Middle School**: Guest Scientist

- 3 Science classes [7th Grade] - Road To Science

2019-2023   **University of Rochester**: Teaching Assistant, Guest Lecturer

- BST 426 [Spr 24] - Linear Models
- BST 426 [Spr 23] - Linear Models
- BST 467 [Spr 21] - Applied Statistics in the Biomedical Sciences
- BST 467 [Spr 20] - Applied Statistics in the Biomedical Sciences

2017-2018   **Rochester Institute of Technology**: Teaching Assistant

- STAT 747 [Spr 18] - Principles of Statistical Data Mining
- MATH 251 [Spr 17] - Probability and Statistics

Consulting Experience

- Department of Biostatistics, University of Rochester.
  Responsibilities: To assist members of URMC academic community with statistical design, data analysis, and software issues for their research.

- Environmental Influences on Child Health Outcomes (ECHO-UPSIDE project)
  Responsibilities: Statistical design, data analysis and paper writing for URMC ECHO researches using models such as ICC, PCA, CCA, LMER etc.

  - Prenatal Diurnal Cortisol paper: I carried out the statistical analysis by building the lmer model, wrote code for the team and revised the statistical section of the paper.

  - Adverse Childhood Experience paper: I developed the analytic approach in the paper, edited and revised the final draft.

  - Fetal Growth project: I wrote a function to calculate estimated fetal weight percentile based on infant demographics and help the team gain insights about fetal growth curve patterns.

- Immune Age Difference paper: I introduced the "immune age difference," a novel variable reflecting the relative maturity of infants' immune systems.
- Baby Cortisol Analysis project: I conducted statistical imputation method to resolve the missing data issue in the analysis.
- Mom Postnatal Analysis project: I did statistical analysis to batch correct the problematic batches and outliers in the data.

Professional Service and Volunteerism

- **Volunteer Scientist**, *SciMatch for Middle Schools at NC Science Festival (SciFest)*, 2025
- **Treasurer**, *Research Triangle Regional Organization of Society for Risk Analysis (SRA)*, 2025 - Present
- **Senior Advisor**, *AI4Purpose Inc.*, 2024 - Present
- **Officer & Webmaster**, *ASA Section on Text Analysis*, 2023 - Present
- **Poster Session Organizer**, *From Foundations to Future of Informatics in Health Symposium*, 2025
- **Journal Reviewer**, *Harvard Data Science Review*, 2025
- **Journal Reviewer**, *Stat*, 2024
- **Journal Reviewer**, *Applied Stochastic Models in Business and Industry*, 2024
- **Session Chair**, "Approaches in Clustering for Analysis of Emerging Data Types", *JSM*, 2022
- **Committee Member**, *ICSA 2020 Applied Statistics Symposium Photo Contest*, 2021
- **Student Representative**, *ASA Text Analysis Interest Group*, 2020 - 2023
- **Event Editor**, *International Astrostatistic Association*, 2018 - 2020
- **Committee Member**, *ICSA 2020 Applied Statistics Symposium Talent Show*, 2020
- **Session Chair**, *8th Annual Conference of the Upstate New York Chapters of ASA*, 2019
- **Journal Reviewer**, *IEEE Transactions on Systems, Man and Cybernetics: Systems*, 2019
- **Session Organizer**, Chair Session "Application of Text Mining", *UpStat Conference*, 2018
- **Judge** for Pre-College Statistical Data Analysis Competition, *UpStat Conference*, 2018
- **Judge** for Undergraduate Data Competition, *ASA DataFest*, 2018
- **Mentor** for Data Competition, *ASA DataFest*, 2017 - 2018
- **Session Organizer**, Chair Session "Environment and Health", *UpStat Conference*, 2017
- **Technical Translator**, Deep Learning for NLP at Oxford with Deep Mind, *Big Data Digest*, 2017
- **Volunteer** for Imagine RIT: Innovation + Creativity Festival, *Imagine RIT*, 2017
- **Peer Mentor**, *CET Academic Programs*, 2015 *(Honored with Best Mentor via election)*

Mentoring

- **AI4Purpose Inc, Senior Advisor [2025-Present]**

  Advised a team developing an AI-driven digital health solution SomniaAI for Menopausal Insomnia:
  Attended Versalie HITLAB Innovation Challenge in Oct 2024 and Swiss Venture Contest in Dec 2024;
  Got invited to present in ASA's inaugural Artificial Intelligence (AI) Workshop NYC 2025;
  Pitched to VCs and angel investors in Paradigm Talks in Aug 2025;
  Filed a provisional patent application with the USPTO. [App Demo]

- **Duke University, Informal Mentor [Summer 2025]**

  Met with incoming undergraduate student to explore potential research directions prior to the start of first year.

Presentations

Nov.2025   RIT Data Science Research Group Seminar - Rochester, US - DSRG2025

         Invited, Soft Post-Clustering Inference with EHR Applications

Oct.2025   Community Gust Lecture at Durham Center for Senior Life - Durham, US

Invited, Numbers That Matter: How Statistics Can Help You Make Smarter Decisions

Aug.2025   Joint Statistical Meetings 2025 - Nashville, US - JSM2025

Topic Contributed, Soft Post-Clustering Inference with EHR Applications

Apr.2025   Duke Industry Statistics Symposium - Durham, NC, US - DISS25

Poster, Image Processing with Optimally Designed Parabolic Partial Differential Equation

Jan.2025   From Foundations to Future of Informatics in Health Symposium - Durham, NC, US - Ed90

Poster, Image Processing with Optimally Designed Parabolic Partial Differential Equation

Aug.2024   Joint Statistical Meetings 2024 - Portland, OR, US - JSM24

Poster, Image Processing with Optimally Designed Parabolic Partial Differential Equation

June.2024   59th Southern Regional Council on Statistics Summer Research Conferenc - Clemson, SC, US - SRCOS24

Poster, Image Processing with Optimally Designed Parabolic Partial Differential Equation

Apr.2024   12th Annual Conference of the UPSTAT New York Chapters of ASA - Rochester, NY, US - UPSTAT24

Contributed, Image Processing with Optimally Designed Parabolic Partial Differential Equation

Apr.2024   Johns Hopkins SMART WG seminar, Department of Biostatistics - Baltimore, MD, US - JobTalk

Invited, Image Processing with Optimally Designed Parabolic Partial Differential Equation

Apr.2023   11th Annual Conference of the UPSTAT New York Chapters of ASA - Rochester, NY, US - UPSTAT23

Contributed, A conditional approach for joint estimation of wind speed and direction under future climates

Mar.2023   SIAM Southeastern Atlantic Section Conference 2023 - Blacksburg, VA, US - SIAM23

Contributed, A conditional approach for joint estimation of wind speed and direction under future climates

Aug.2022   Joint Statistical Meetings 2022 - Washington DC, US - JSM2022

Topic Contributed, Text Mining and Music Mining

May.2022   UR Biostatistics Department Annual Student Workshop - Rochester, NY - URMC

Seminar Talk, Partial Differential Equation & Kernel Smoothing Modeling In Image Analysis

Sep.2021   Classification and Data Analysis Group Conference - Florence, Italy - CLADAG

Invited, Minimizing Conflicts of Interest: Optimizing the JSM Program

Aug.2021   Joint Statistical Meetings 2021 - Seattle (Virtual), US - JSM2021

Topic Contributed, Minimizing Conflicts of Interest: Optimizing the JSM Program

Feb.2021   Data Science DC - Washington DC (Virtual), US - DSDC/TAIG

Invited, Text Mining and Music Mining [**Video**]

Dec.2020   ICSA 2020 Applied Statistics Symposium - Texas (Virtual), US - ICSA2020

Poster, Bayesian and Unsupervised Machine Learning Machines forJazz Music Analysis

Aug.2020   SIAM Conference on Mathematics of Planet Earth - California (Virtual), US - MPE20

Contributed, Statistical Wind Conditions Assessment across inland and off-shore US under Future Climate Scenarios

Aug.2020   Joint Statistical Meetings 2020 - Philadelphia (Virtual), US - JSM2020

Contributed, Naive Dictionary On Musical Corpora: From Knowledge Representation To Pattern Recognition

Aug.2019   Argonne National Laboratory - ANL/MCS

Lightning Talk, Wind Conditions Assessment in North-America Under Climate Change Scenarios

Jul.2019	Joint Statistical Meetings 2019 - Denver, US - JSM2019
	Poster, Exploratory analysis of Hurricane Storm Surge
May.2019	IMS/ASA Spring Research Conference - SRC 2019
	Poster, Uncertainty Quantification in Tropical Cyclone Climatology
May.2019	Statistical Perspectives on Uncertainty Quantification (SPUQ) Workshop - SPUQ 2019
	Poster, Exploratory Analysis of Tropical Cyclone Climatology
Apr.2019	6th Bayesian, Fiducial, and Frequentist (BFF) Conferences - BFF 2019
	Poster, Bayesian and Unsupervised Machine Learning Machines for Jazz Music Analysis
Apr.2019	8th Annual Conference of the UPSTAT New York Chapters of ASA - UpStat 2019
	Poster, Text Mining and Music Mining
Nov.2018	SAMSI Model Uncertainty Program Storm Surge Working Group - SAMSI
	Seminar Talk, Initial Exploratory Analysis of Synthetic Storm Tracks *(30 minutes talk)*
Oct.2018	SAMSI Model Uncertainty Program Data Fusion Working Group - SAMSI
	Seminar Talk, Data Fusion for Music Mining *(40 minutes talk)*
Oct.2018	International Conference on Advances in Interdisciplinary Statistics and Combinatorics - AISC
	Contributed, Machine Learning for Music Mining with LDA Model, *SAMSI Academic Session*
Sep.2018	Data Science Research Group in Rochester Institute of Technology - DSRG
	Seminar Talk, Statistical Aspects of Music Mining *(80 minutes lecture)*
Sep.2018	Cornell Day of Statistics 2018 - Cornell
	Poster, Bayesian and Unsupervised Machine Learning Machines for Jazz Music Analysis
Jul.2018	Joint Statistical Meetings 2018 - Vancouver, Canada - JSM
	Poster, Bayesian and Unsupervised Machine Learning Machines for Jazz Music Analysis
Apr.2018	7th Annual Conference of the UPSTAT New York Chapters of ASA - UpStat 2018
	Contributed, Music Mining In Topic Modeling Approach For Improvisational Learning
Feb.2018	Graduate Seminar in Rochester Institute of Technology - RIT
	Seminar Talk, Topic Modeling with LDA Tutorial *(80 minutes lecture)*
Nov.2017	Graduate Showcase in Neuroscience and Signal Processing Session - RIT
	Contributed, Statistical Challenges of Echo State Networks
Nov.2017	6th Annual Conference of the UPSTAT New York Chapters of ASA - UpStat 2017
	Contributed, Statistical Aspects about Echo State Networks

Professional Affiliation

- American Statistical Association (ASA)
- Institute of Mathematical Statistics (IMS)
- International Astrostatistics Association (IAA)
- International Society for Bayesian Analysis (ISBA)
- Astrostatistics and Astroinformatics Portal (ASAIP)
- International Chinese Statistical Association (ICSA)
- Caucus for Women in Statistics and Data Science(CWS)

Skills and Interests

- **Programming:** Python, R, SAS, Matlab, LaTeX, SQL
- **Marathon:** Finish 26.2-mile journey in limited time, 2017, 2018, 2019
- **Music:** Perform Ghanaian and Senegalese music as member of African Percussion & Dance Ensemble
- **Other:** Zumba, Piano, Hot Yoga, Surfing, Snowboarding, Hiking, Climbing, Taekwondo, Sketching, Culinary Arts